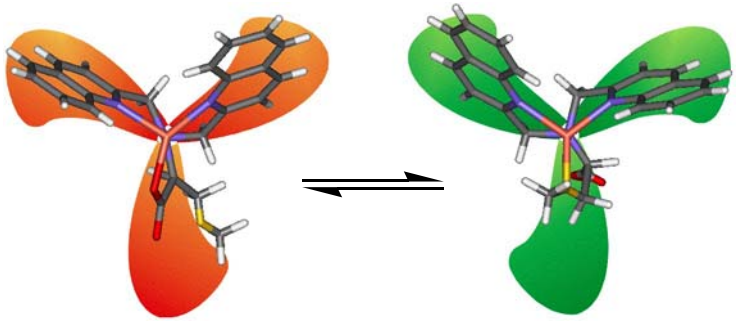
James W. Canary
New York University
CHE-0079072



Graduate students Homar Barcena, Andrea Holmes, Steffen Zahn, and Professor James Canary report that amino acids and amino alcohols have been converted into propeller-like molecules by way of a two-step derivatization procedure and addition of a copper salt. The propellers possess a handedness that depends on whether the starting material was derived from a d or l-amino acid. The naturally occurring steroisomer of methionine gives a right-handed propeller upon forming a complex with cupric salts, while the other form gives a left-handed twist.

The handedness of the molecules can be manipulated. Addition of cuprous salts give propellers of opposite handedness (i.e,. the compound derived from natural methionine gives a left-handed propeller). Additionally, if a copper salt of one of the molecules is reacted with an oxidant or reductant that is capable of converting cuprous to cupric (or vice versa), the handedness of the propeller inverts. Some of the optical properties of the compounds suggest possible applications in the development of new technology for optical displays.